

[Med. Entomol. Zool. Vol. 56 No. 4 p. 275-282 2005]

## ***Topomyia roslihashimi*, a new species of the subgenus *Suaymyia* (Diptera: Culicidae) from Gombak, Peninsular Malaysia**

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(Received: 18 April 2005; Accepted: 4 July 2005)

**Abstract:** *Topomyia (Suaymyia) roslihashimi*, a new species, is described from specimens collected in Ulu Gombak, Peninsular Malaysia. The description includes illustrations of male genitalia, the pupa and some parts of the larva. The male of this species differs from other species of the subgenus in having unique modification of the scale patch on the 2nd tarsal segment of the hindleg. The larva is predacious, having greatly enlarged maxillae apparently adapted for grasping prey in bamboo internodes.

Key words: mosquito, Culicidae, *Topomyia roslihashimi*, subgenus *Suaymyia*, new species, Peninsular Malaysia

Mosquito larval collections were made in Ulu Gombak, Peninsular Malaysia at 200–600 m above sea level in March and October 2003, and October 2004. During the examination of the adult specimens that emerged from individual rearing of the larvae collected in bamboo internodes and newly cut bamboo stumps, an interesting species of the genus *Topomyia*, subgenus *Suaymyia* was found. After careful comparison with the descriptions of *Suaymyia* species from Southeast Asia (Baisas, 1946; Edwards, 1922; Klein, 1977; Leicester, 1908; Miyagi, 1976, 1980; Miyagi and Toma, 1989; Miyagi et al., 1983, 1989; Thurman, 1959; Toma and Mogi, 2003) and China (Dong, 1995; Dong et al., 1997; Gong and Lu, 1995; Gong et al., 1999; Lu et al., 1997; Zhou et al., 1999), we were able to confirm that it is a new species and named it *Topomyia (Suaymyia) roslihashimi*. The terminology used in the descriptions follows Harbach and Knight (1980, 1981), and Harbach and Peyton (1993).

### ***Topomyia (Suaymyia) roslihashimi* Miyagi and Toma, sp. n. (Figs. 1, 2 and 3; Table 1)**

Male.

**Head:** Black in dorsal aspect; vertex covered closely with broad flat dark scales, with somewhat purple reflections; apical part of vertex with a diamond shaped silver scale patch; erect scales and narrow decumbent scales absent on occiput; a pair of brownish interocular and several black ocular setae present; postgena covered with flat silver scale patch. Clypeus small, rectangular in shape with pale scales except dark on sides. Maxillary palpus short, about 0.12 of proboscis covered with dark scales. Proboscis slender, 2.75 mm, longer than antenna; slightly swollen at the distal end and covered by dark scales except for a patch of white scales at base and ventral line of white scales extending from base to about apical 1/6 of proboscis. Pedicel brown covered closely with fine grayish scales.

**Thorax.** Scutum covered densely with velvety black scales and with a median silvery line from anterior promontory to prescutellar

area; the line consisting of double rows of overlapping flat silvery scales. Thoracic pleura covered densely with silvery reflected spatulate scales on upper and lower postpronotal, antepronotal, upper proepisternal, postspiracular, subspiracular, prealar, upper and lower mesokatepisternal, upper mesepimeral and metepisternal areas. Conspicuous black setae absent on the pleuron, except about 10 antepronotals, one postpronotal, 3 prespiraculars, one upper prealar, and 4–6 pale upper mesepimerals. Scutellum with flat silvery scales and 4 well developed setae on median lobe, and 2 or 3 setae on each lateral lobe and with black spatulated scales.

**Wing.** Length 3.75 mm: Cell  $R_2$  about 2.12 of stem  $R_{2+3}$ ; alula with fine piliform scales on margin distally: upper calypter without setae. Halter: Scabellum pale, pedicel and capitellum with dark scales.

**Legs.** Coxae and trochanters yellow, with silvery-white scales, trochanters with some dark scales dorsally at apex; femora, tibiae and tarsi dark scaled dorsally, yellow scaled on basal half ventrally. Midfemora longer than fore- and hindfemur: first tarsal segment of all legs ( $Ta-I_1-Ta-III_1$ ) longer than each tibia ( $Ti-I-Ti-III$ ); second segment of hindtarsus ( $Ta-III_2$ ) with specialized fringe of black scales from ventral surface (Fig. 1D, E). Fore unguis a little larger than others, unequal in size without lateral tooth. Ungues of mid- and hindlegs very small, paired without lateral tooth.

**Abdomen.** Terga dark-scaled with golden yellow spatulate scales laterally, a line of demarcation between dark and golden scaling more or less straight on terga I to VII in lateral view; tergum I with lateral tuft of about 20 setae. Terga VII, VIII and genital segment curved upwardly in lateral view. All sterna with yellow spatulate scales.

**Genitalia** (Fig. 1A–C, F–J). Lobes of tergum IX (Fig. 1J) widely separated by narrow bridge, each lobe attenuated apically, terminating in single stout blade-like seta and 3 setae closely spaced on inner basal margin of each lobe. Gonocoxite (Fig. 1A) length about 2.2 times breadth at middle with ventrosubapical tuft of many long filamentous setae (Fig. 1F). Claspette (Fig. 1G) thumb-like tubercle, with one prominent apical seta reaching at apex of gonocoxite. Gonostylus (Fig. 1–B, C) slightly shorter than gonocoxite, narrow curved with accessory basal lobe with many fine setae, bi-

furcated into two lobes apically, the external lobe with several fine setae on inner margin, the outer lobe with a few fine setae, a gonostylar claw large dark brown, hooked at tip. Phallosome as shown in Fig. 1H. Paramere (Fig. 1I) large, bifurcated into finger-like lobes apically.

**Female.** Unknown.

**Pupa.** (Fig. 2A–C, Table 1). Abdomen (Fig. 2 A) about 4.6 mm. Trumpet 0.4 mm, index 2.23–3.46. Paddle 0.6–0.7 mm, index 2.23–3.46. Chaetotaxy as figured and given in Table 1. Cephalothorax (Fig. 2A, B): Trumpet (Fig. 2C) yellow-brown in color, with fine sculpturing. Seta 1-CT long, conspicuous, single or double. Paddle broad, ending in a tapered blunt point, uniformly and lightly pigmented; with a distinct midrib and with minute spicules along apical margin. Male genital lobe extending to about 0.8 of paddle, median caudal lobe extending to about 0.3 of paddle.

**Fourth-instar Larva** (Fig. 3A–H). Partial description based on incomplete larval exuviae.

**Head** (Fig. 3A). Distinctly wider than long; seta 1-C slender, single lateral to 4-C; setae 4–6 C single; 7-C with 3–5 branches; 8,9-C with 2–3 branches; 10-C relatively long, bifid; 11-C single; 12-C with 4 branches; 13,14-C bifid; 15-C with 4–6 branches. Mandible (Fig. 3G) black, lateral surface spiculate. Maxilla (Fig. 3B, C) large, variable in length, MxBn (maxillary bundle) as long as or a little shorter than length of MxBo (maxillary body), index (MxBn/MxBo) 0.5–1.0 ( $X=0.82$ ); mesal teeth (laciniarastrum, LR) comprise a row of 2 (rarely 3) short pointed projections; seta 4 well developed, with 2 branches, situated at basal 0.77 maxillary body; apical tooth not developed. Dorsomentum (Fig. 3D) with 7 teeth on either side of median tooth, all teeth essentially equal in size. Antenna (Fig. 3E). Shaft shorter or as long as maxillary bundle, seta 1-A single, inserted at basal 0.7, not reaching beyond apex of shaft.

**Abdomen:** Comb on segment VIII consisting of 17–20 spine-like teeth with fine spicules on sides at base (Fig. 3F).

**Siphon.** Moderately pigmented throughout length, gradually tapering apically, length about 0.9 mm, index 3.4–4.8, pectin with 2–3 minute lateral fringes, restricted to basal 1/4 of siphon, seta 1a-S large, 10 pairs situated from base to apex, each with 3–6 long finely acic-

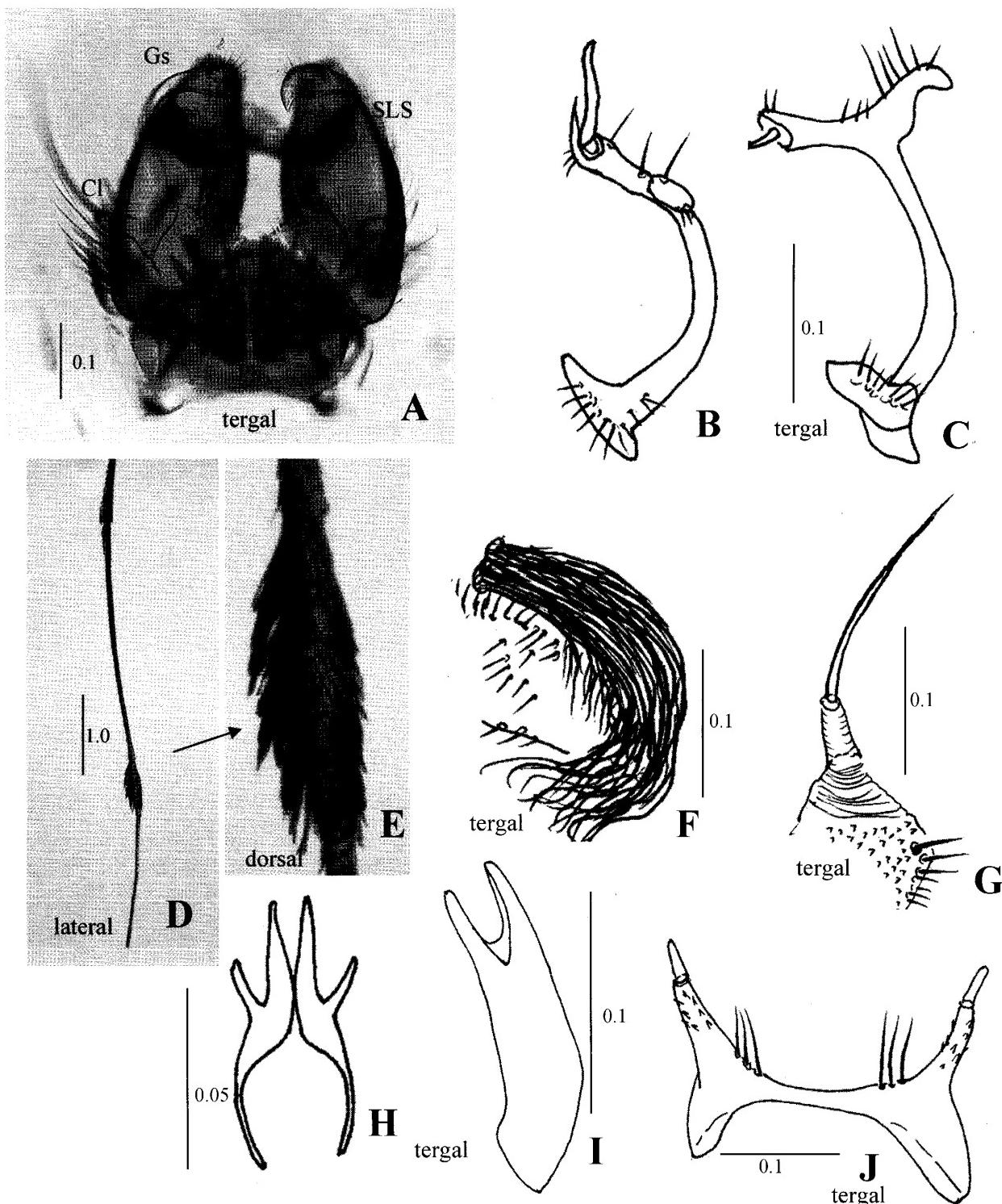


Fig. 1. *Topomyia (Sua.) rostihashimi*, sp. n. Male genitalia of paratypes no. 134 (A, D, E) and 143 (B, C, F-J), aspect as indicated.  
 A, genitalia; B, C, gonostylus (Gs); D, tarsus of hindleg; E, scale patch on the 2nd tarsal segment of hindleg; F, ventrosubapical tuft of setae (SLS); G, claspette (Cl); H, phallosome (Ph); I, paramere (Par); J, tergum IX. Scales in mm.

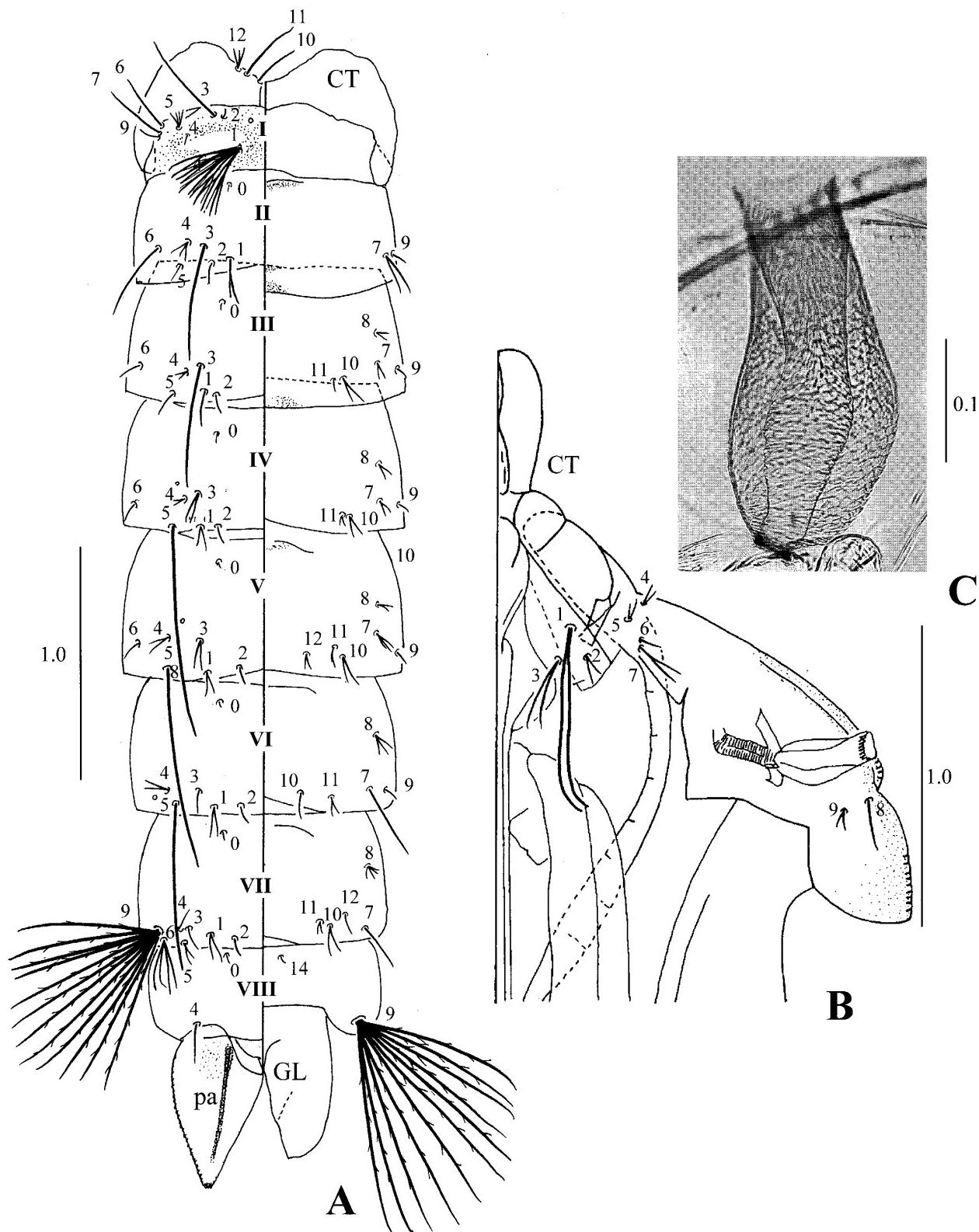


Fig. 2. *Topomyia (Sua.) roslihashimi*, sp. n. Pupa of paratype no. 134.

A, dorsal and ventral aspects of left side of abdomen; B, dorsolateral aspect of cephalothorax; C, trumpet. Scales in mm.

Table 1. Chaetotaxy of the pupa of *Topomyia (Sua.) rosulihashimi* sp. n. (three male specimens)

Seta no.	Cephalothorax	Abdominal segments							
		I	II	III	IV	V	VI	VII	VIII
0	0, 1 (0)	—	1	1	1	1	1	1	1
1	1, 2 (2)	M <sup>1,2</sup>	2-6 (2)	1-3 (1)	1, 2	1, 2	1, 2 (1)	1, 2	—
2	1, 2 (2)	1, 2 (1)	1	1	1	1	1	1	—
3	1, 2 (2)	1, 2 (1)	1, 2 (1)	1	2, 3	1, 2 (2)	1	1, 2 (1)	—
4	1, 2 (2)	1	2-4 (3)	1-4 (3)	1-4	2-4 (3)	1, 2 (1)	1, 2 (1)	1
5	1-3 (2)	4-6	1, 2 (1)	1	1	1	1	1-4	—
6	1	1	1	1	1	1, 2 (1)	—	1-5	—
7	1-3	1-3	2, 3 (2)	1-3 (2)	1-3 (2)	2-6	1, 2	1, 2 (1)	—
8	1-2 (1)	—	—	1, 2 (2)	1, 2 (2)	1-3 (2)	3-5	5-8 (5)	—
9	1-2 (2)	1	1	1	1	1	1	12-14 <sup>2</sup>	11-19 <sup>2</sup>
10	1	—	—	1-4	1-3 (2)	1, 2 (2)	1	1-3 (3)	—
11	1	—	—	1, 2 (1)	1-3 (2)	1-3	1-3 (2)	1-4	—
12	1, 2	—	—	—	—	2 <sup>3</sup>	—	—	—
14	—	—	—	—	1	1	—	—	1

<sup>1</sup> M = multiple branched.<sup>2</sup> Prominent seta.<sup>3</sup> Usually absent.

Modes in parenthesis

ulate setae; 2a-S with 8 pairs, each with 4-12 well developed setae (Fig. 3H).

**Type material.** Holotype male (040315-48) on pin with L (larval) and P (pupal) exuviae mounted on slide (837) possesses the following collection data: Ulu Gombak, about 30 km from Kuala Lumpur, Peninsular Malaysia, March 15, 2004 collected as larva from living bamboo internode by I. Miyagi and T. Toma.

Paratypes. 3 males (031011-10), L and P exuviae on slide (143) with genitalia on slide (G211); L and P exuviae (106) with genitalia (G210); L and P exuviae (134). 1 male (031011-4), L and P exuviae (136). 1 male (040909-1), L and P exuviae (264) with genitalia (G52). 1 male (040314-12), L and P exuviae (619) with genitalia (G47). Collection data same as the holotype. All specimens were collected as larval and pupal stages from the internode of living small bamboo with small hole at Ulu Gombak, Malaysia by I. Miyagi and T. Toma. The holotype and some of the paratypes will be deposited in the National Museum of Natural History (NMNH),

Smithsonian Institution, Washington, D.C., and other Institutes, after our taxonomic work on the genus *Topomyia* is accomplished.

**Etymology.** It is our honor to dedicate this new species *To. rosulihashimi* to Dr. Rosli Hashim, Lecturer-in-charge, Ulu Gombak Field Study Centre, University Malaya, for his contributions to the study of animal ecology of Malaysia.

**Taxonomic Discussion.** In a bamboo forest of Ulu Gombak, Malaysia, three species of the subgenus *Suaymyia* were collected separately from living bamboo internodes and bamboo stumps: *Topomyia decorabilis* Leicester, *To. apsarae* Klein which is a new record for Peninsular Malaysia, and *Topomyia spathulirostris* Edwards. *Topomyia rosulihashimi* sp. n. is very similar to *To. apsarae* in general appearance, but the male of this species is easily distinguished by the elongated flat scale tuft on the 2nd tarsal segment of the hindleg (flat scale tuft on the 4th tarsal segment of the hindleg in *To. apsarae*) and genitalia with conspicuous ventrosubapi-

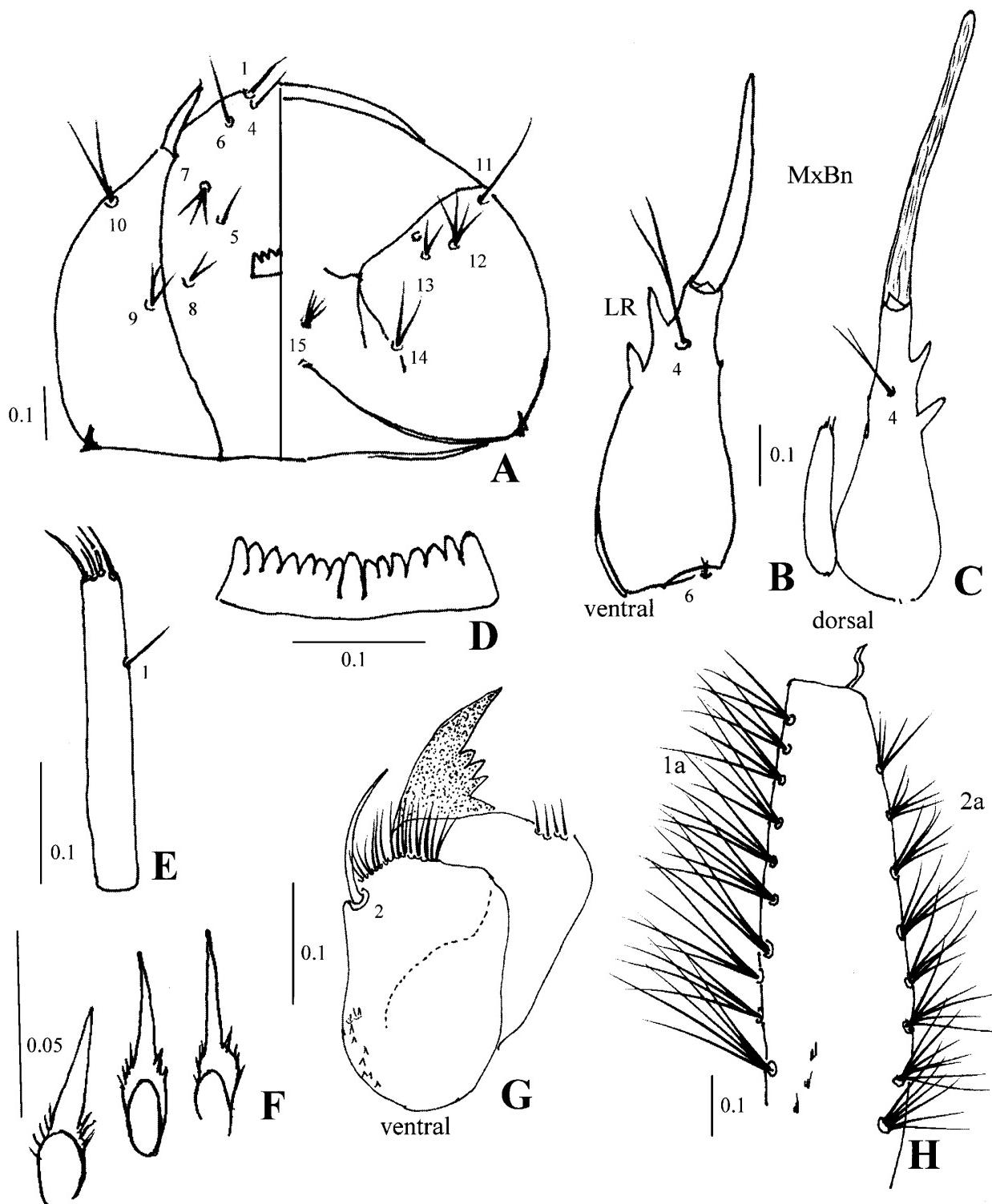


Fig. 3. *Topomyia (Sua.) roslihashimi*, sp. n. Larva of paratypes no. 837 (A, H), 143 (B, D), 134 (E), 619 (C, G), 147 (F), aspect as indicated.

A, head, dorsal and ventral aspects of left side; B, maxilla; C, maxilla; D, dorsomentum; E, antenna; F, comb scales; G, mandible; H, shipon. Head, dorsal and ventral aspects of left side. Scales in mm.

cal tuft of many long filamentous setae. The larva and pupa of this species are also closely related to *To. apsarae* and are difficult to distinguish from each other. A slight difference may be found in a longer siphon with usually 8 pairs of 2a-S (6 pairs in *To. apsarae*) and a large maxillary bundle. Index (MxBn/MxBo)=0.82 (0.55 in *To. apsarae*).

**Bionomics.** The immatures of *To. roslihashimi* sp. n. were found at water accumulation in small-sized living bamboo (3–5 cm diameter) internodes with a small hole (less 2 mm) bored by some insects, such as ants and Chrysomelid beetle (Macdonald, 1960, 1962). The larvae of *Tripterooides aranoides* (Theobald), *To. spathulirostris* Edwards, *To. apsarae*, *To. decorabilis*, *Toxorhynchites* spp., *Armigeres dolicocephalus* (Leicester), *Armigeres digitatus* (Edwards) and *Armigeres omissus* (Edwards) were found in living bamboo internodes at the same bamboo forest, but these species were never found with *To. roslihashimi* in the same bamboo internode. Judging from the large maxillary bundle, the larva of *To. roslihashimi* is predacious, feeding on larvae of mosquitoes and other aquatic insects breeding in the bamboo internodes.

**Distribution.** Known only from Ulu Gombak bamboo forest, Peninsular Malaysia.

#### ACKNOWLEDGEMENTS

We thank Dr. Mohd Sofian Azirum and Mr. Daicus M. Belabut, University of Malaya for their kind cooperation in the field study. Special thanks to Dr. Motoyoshi Mogi of Saga University, Dr. Takao Okazawa of Kanazawa University, Dr. Yukiko Higa of University of the Ryukyus and Mr. Keisyo Miyagi of President of the Ocean Health Corporation, Urasoe, Okinawa, for their support in various ways. We also thank Dr. Yong Hoi Sen, Senior Fellow, Academy of Sciences, Malaysia,

for critically reviewing the manuscript.

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